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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/645,552	08/22/2003	Sungkwon C. Hong	M4065.0953/P953	9137
24998	7590	12/15/2005	EXAMINER	
DICKSTEIN SHAPIRO MORIN & OSHINSKY LLP			PHAM, LONG	
2101 L Street, NW			ART UNIT	
Washington, DC 20037			PAPER NUMBER	
			2814	

DATE MAILED: 12/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/645,552

Applicant(s)

HONG, SUNGKWON C.

Examiner

Long Pham

Art Unit

2814

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 7-9, 13 and 14 is/are allowed.
- 6) ☒ Claim(s) 1-6 and 10-12 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 05/02/05
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____

DETAILED ACTION

Rejections and/or objections as previously applied

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1, 2, 3, 4, 5, 6, 10, 11, and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over the applicant's admitted prior art (AAPA) in combination with Tsukamoto (US patent 5,047,818).

With respect to claims 1, 4, and 11, AAPA teaches a pixel cell comprising (see fig. 1 and the Background of the Invention on pages 1-3 of this application):
a photo-conversion device that generates charges;
a charge storage region that stores the charges; and
a transistor having a gate between the photo-conversion device and the charge storage region for transferring the charges from the photo-conversion device to the charge storage region.

However, AAPA fails to teach the charge storage region comprises of : a doped region of a second conductivity type, a doped surface layer of a first conductivity type over and in contact with the doped region, and a control gate is being over the doped surface layer.

Tsukamoto teaches a charge storage region that comprises a doped region 12 of a second conductivity, a doped surface layer 11 of a first conductivity type over and in contact with the doped region, and a control gate 5 being over the doped surface layer. See figs. 1-3 and the associated text.

It would have been obvious to one of ordinary skill in the art of making semiconductor devices to incorporate the charge storage region of Tsukamoto into the device of AAPA to prevent soft errors caused in the charge storage capacitor.

See col. 2, lines 8-9.

With respect to claims 2 and 12, Tsukamoto further teaches that the charge storage region is part of a buried channel MOS capacitor. See figs. 1-3 and the associated text.

With respect to claim 3, Tsukamoto further teaches that the charge storage region is located below a surface of a substrate. See figs. 1-3 and the associated text.

With respect to claim 5, Tsukamoto further teaches the control gate 5 is made of doped polysilicon. See .col. 3, lines 50-55.

With respect to claim 6, AAPA further teaches that the first transistor is a shutter transistor for determining an integration time for the pixel cell. See page 2, (0007) of this application.

With respect to claim 10, AAPA fails to teach that the photo-conversion device is a pinned photo-diode.

However, the use of pinned photodiode as photo-conversion device is well-known in the art of making semiconductor device.

Response to Arguments

Applicant's arguments filed 05/23/05 have been fully considered but they are not persuasive. See below.

In response to the applicant's arguments in the bottom paragraph on page 6 and the first and second paragraphs on page 7 of the applicant's response dated 05/23/05, it is submitted that a prior art reference is evaluated by what it suggests to one versed in the art, rather than by its specific disclosure. In re Bozek, 163 USPQ 545 (CCPA 1969). Further, it is submitted that a reference is considered not only for what it expressly states, but for what it would reasonably have suggested to one of ordinary skill in the art. In re DeLisle, 160 USPQ (CCPA 1969). In this case, Tsukamoto teaches the formation of a charge storage region which stores under a control gate to prevent soft errors.

Art Unit: 2814

In response to the applicant's arguments in the paragraph connecting pages 7 and 8, it is submitted that the fact that the applicant has a different reason or advantage resulting from doing what the relied prior art suggested doing is not indicative or demonstrative of unobviousness. In *Re Kronig* 190 USPQ 425,428 (CCPA 1976); In *Re Lintner* 173 USPQ 560 (CCPA 1972).

Allowable Subject Matter

Claims 7-9 and 13-14 are allowed.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Long Pham whose telephone number is 571-272-1714. The examiner can normally be reached on Mon-Frid, 10am to 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on 571-272-1705. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2814

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Long Pham

Primary Examiner

Art Unit 2814

LP